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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/091,493	03/07/2002	Yuusuke Takamoto	381NT/44743TCO	2343

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EXAMINER

VANAMAN, FRANK BENNETT

ART UNIT	PAPER NUMBER
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3618

DATE MAILED: 10/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/091,493

Applicant(s)

TAKAMOTO ET AL.

Examiner

Frank Vanaman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 28 August 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,3,5,6,8-11,13 and 14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2, 3, 5, 6, 8-11, 13 and 14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Continued Examination

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 28, 2003 has been entered.

Status of Claims

2. Claims 2, 3, 5, 6, 8-11, 13 and 14 are pending, claim 14 having been added.

Claim Objections

3. Claim 3 is objected to because it depends from a canceled claim. Claim 3 is written so as to depend from claim 12 which has been canceled. In view of new claim 14 being similar in nature to previously pending claim 12, claim 3 is assumed dependent from claim 14.

Claim Rejections - 35 USC 112

4. Claims 3, 11 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 3, the term "the brake pedal" lacks a clear antecedent basis, further it is not clear whether or not the recitation of the torque being reduced, allowing vehicle motion, which appears to be recited in both claims 3 and 14 (from which claim 3 is assumed to depend) is redundant inasmuch as both claims appear to recite similar limitations; in claim 11, the recitations of further movement of the vehicle in the absence of a change in state of the brake pedal is confusing in view of the limitations of claim 2 (all of which are included in claim 11), which refer to a stopping torque based on a degree of brake pedal depression, particularly in the absence of any recitation of intermediate conditions, actions or structure; in claim 14, the recitation of a storing motor torque are confusing in that it is not clear whether a quantity of energy needed to deliver a torque, or a value representing such a torque, is being 'stored'.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior office action.

6. Claims 3 and 14 are rejected, as best understood, under 35 U.S.C. 103(a) as being unpatentable over Takamoto et al. (US 5,467,275). Takamoto et al. teach an electric vehicle having a body (1) and a motor (3) which drives vehicle wheels and which may further be used to hold the vehicle in a stopped position (col. 1, lines 59-63) even when pressure on a brake pedal is released, and having a portion (314-315) for calculating a torque (R) which corresponds to at least a brake operation quantity (b^* ; Tb^*) measured by a depression of the brake pedal (Xb), and a second portion (311, 313) which provides positional control (based on a signal Y from a position encoder) feeding a torque command (note that motor torque directly corresponds to a current supplied to the motor by the controller, the resulting commands output from portion 314 to the motor in either torque or position control modes are torque outputs), the torque values being stored in a microprocessor which performs the operating steps, the motor used to maintain the vehicle in a stopping position, wherein for a time period which corresponds to the time between an operator removing pressure from a brake pedal and applying pressure to an accelerator pedal, the control holds the vehicle at a constant position ($Sp=ON$, col. 5, lines 21-27), and further wherein an option is provided such that under the operation of a switch (913) the vehicle is allowed to move a distance (i.e., the constant position control is temporarily released, and the torque command to the motor is changed) from the held position, and is again stopped (col. 12, lines 7-18). The reference to Takamoto et al. fails to teach the use of a minimum torque for maintaining the vehicle at a stopped position, however in view of the reference teaching the holding of a stopped position by a torque sufficient to hold such a position, it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange the operation of the controller to use no more torque than needed to maintain the stopped position in order to reduce heating in the transistor drivers or inverter, and to save energy.

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7. Claims 2, 9, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takamoto (Cited above) in view of Siepker (US 5,916,062). Takamoto et al. teach an electric vehicle having a body (1) and a motor (3) which drives vehicle wheels and which may further be used to hold the vehicle in a stopped position (col. 1, lines 59-63) even when pressure on a brake pedal is released, and having a portion (314-315) for calculating a torque (R) which corresponds to at least a brake operation quantity (b^* ; Tb^*) measured by a depression of the brake pedal (Xb), and a second portion (311, 313) which provides positional control (based on a signal Y from a position encoder) feeding a torque command (note that motor torque directly corresponds to a current supplied to the motor by the controller, the resulting commands output from portion 314 to the motor in either torque or position control modes are torque outputs), the motor used to maintain the vehicle in a stopping position, wherein for a time period which corresponds to the time between an operator removing pressure from a brake pedal and applying pressure to an accelerator pedal, the control holds the vehicle at a constant position ($Sp=ON$, col. 5, lines 21-27), and further wherein an option is provided such that under the operation of a switch (913) the vehicle is allowed to move a distance (i.e., the constant position control is temporarily released, and the torque command to the motor is changed) from the held position, and is again stopped (col. 12, lines 7-18). The reference of Takamoto et al. fails to teach the torque applied to maintain the vehicle in a stopped position as corresponding to an amount of brake pedal depression. Siepker teaches a vehicle system for maintaining a stopped position after a user has exerted a braking force, wherein a braking pressure exerted by the operator is measured, and a secondary system generates a pressure corresponding to that pressure applied by the driver, in order to hold the vehicle. See step 12, and col. 4, lines 25-35. It would have been obvious to one of ordinary skill in the art at the time of the invention to employ the concept taught by Siepker of deriving a quantity of holding force from the braking force generated by the operator for holding the vehicle of Takamoto et al. in a stopped position, for the purpose of insuring that at least a force deemed sufficient by the operator would be applied to the vehicle, insuring that the vehicle would indeed be held positively at a stopping position.

8. Claims 5, 6, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takamoto et al. in view of Hotta (US 5,934,398). The reference to Takamoto et al. is discussed above and fails to teach the holding torque applied to the motor to hold the vehicle position as being reduced after a time period. Hotta teaches a vehicle motor control system for driving a motor (11) which determines a stopped state of the motor, for example while holding on a hill (col. 5, lines 38-52), and calculates a time period (72, 73) after which the current supplied to the motor is decreased (61) for preventing degradation of or damage to the switching transistors (21-26). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a timer and motor current (and thus motor torque) limiting device as taught by Hotta to the vehicle of Takamoto et al., for the purpose of preventing damage to the motor controller of Takamoto et al., for example while holding a constant position for a lengthy time period.

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takamoto et al. in view of Hotta and Siepker. The references of Takamoto et al. and Hotta are discussed above, and fail to teach a hydraulic brake device for holding the vehicle in a stopped position upon the decrease of holding torque delivered by the motor. Siepker teaches a hill-holding device which determines a braking pressure required to hold a vehicle in a stopped position and applies a corresponding braking force through a vehicle's existing hydraulic braking system (note col. 1, lines 54-58; col. 2, lines 19-28) by an independent actuating element separate from the user-operated brake pedal circuit. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide an independent actuator as taught by Siepker for actuating an existing friction braking system of the vehicle of Takamoto et al. as modified by Hotta, the independent actuator responsive to the operation of the current limiting device as taught by Hotta, for the purpose of providing a braking force from a separate source than the motor, such that during a reduction of motor torque due, for example, to overheating of the control transistors, the vehicle may still remain stopped without the intervention of a user, in order to render the stopped-position holding process transparent to the operator of the vehicle.

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Response to comments

10. As regards applicant's comments directed to the reference of Takamoto et al. as applied by itself to claims 2 and 9 are noted. The examiner agrees that the reference to Takamoto et al. fails to anticipate the feature specifically pointed out by applicant. Note the reference to Siepker, which does teach the provision of a stopping force which is derived from the braking force which was generated by a user. As regards the reference to Takamoto et al., and the positional control, applicant's comments are not entirely clear-- the reference to Takamoto et al. does teach a positional control based on the vehicle position; this control is based on the position encoder signal Y, as mentioned by Takamoto et al. and as illustrated in the figures (sensor 9, figure 1; signal Y being introduced into the control law at figure 4, for example).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to F. Vanaman whose telephone number is 703-308-0424. Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist whose telephone number is 703-308-1113.

As of May 1, 2003, any response to this action should be mailed to:

Mail Stop _____
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450,

Or faxed to one of the following fax servers:

Regular Communications/Amendments: 703-872-9326
After Final Amendments: 703-872-9327
Customer Service Communications: 703-872-9325

F. VANAMAN
Primary Examiner
Art Unit 3618


10/27/03